ENC-3300-TRBO

User Guide,
Installation & Service Manual,
Programming Guide

Virtual DTMF Radio Encoder
for Motorola✳ TRBO Digital radios

Made in USA

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⚠️ **<u>Warning</u>** ⚠️

**If incorrectly used, this equipment can cause severe injury.
Those who use and maintain the equipment should be trained in
it's proper use, warned of it's dangers, and should read the
manuals before attempting to set up, operate, adjust or service
the equipment. Keep this manual for future reference.**

Important Safety Information

<u>System Planning</u>

Proper planning is the cornerstone to an effective warning system. The Federal Emergency Management Agency (FEMA) publishes the "Outdoor Warning Guide" CPG 1-17, which should be used in planning your system. In addition, you should recognize and understand the following items:

•Outdoor warning equipment are not intended to be heard indoors. Conversely indoor devices are not intended to cover outdoor environments. All devices have specific purposes and distances that they can be considered effective. Proper placement and selection of the correct equipment is necessary to cover a desired area. Refer to the FEMA guide for placement guidelines.

•Training is necessary to ensure those responsible can correctly activate the system. It is also necessary that everyone understand the purpose of the warning system and the protective actions they need to take when the system is activated. Periodic tests can serve to accomplish the training for the operators, in addition to demonstrating the various signals to the public.

•All systems must have contingency plans in case equipment problems or operator errors interfere with its performance. Just as with the primary system, the contingency plans should be periodically tested to make sure those responsible know how to implement them and the necessary response from the public is achieved.

Installation & Service Precautions

•**Electrocution, severe personal injury and damage to equipment can occur during installation or servicing this equipment. All electrical work should be performed by, or under the supervision of, an experienced electrician and in accordance with all applicable electrical, fire, building and safety codes.**

•**This equipment can start at any time from local controls, automatic timers, radio remote, commands from a computer and many other sources. The sound output can cause hearing damage, while other attached equipment can cause personal injury when they engage. Whenever working in or around the equipment you must assume it could activate at any moment, and take appropriate precautions to protect yourself and others. You should completely disable the equipment before working on or in close proximity to any part of it.**

•**You must test the system and equipment to ensure it is operating correctly after the installation, as well as after any work has been performed.**

System Operation

•**Training is necessary to ensure those responsible can correctly activate the system. It is also necessary that everyone understand the purpose of the system and the actions they need to take when the system is activated. Periodic tests can serve to accomplish the training for the operators, in addition to demonstrating the various signals to the public.**

•**You must carefully read and completely understand all the information about the system and equipment including its abilities and its limitations. Since no system is infallible, you must have contingency plans for warning in the event the primary systems do not perform as expected, for any reason.**

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RXC-3300-TRBO✶

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FCC Compliance Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

<u>FCC WARNING</u>

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

<u>Caution:</u>

To comply with the limits for an FCC Class B computing device, always use the accessories supplied with this unit.

The Federal Communications Commission warns that changes or modifications of the unit not expressly approved by Genave could void the user's authority to operate the equipment.

Latest Document Version Changes

Revision 4, 2015-11-05

- Added MP3 player control.
- Updated firmware version to GOS3-GG-151105.
- Additional interface images and diagrams.

Table of Contents

Specifications

Voltage In: 11 to 14 volts dc.

Current requirements:
         209 ma Quiescent
         250 ma Active
         300 ma Max

Output Connector:
         16 – 26 AWG
         3.5 mm pin spacing
         125v @ 5 amps

DC Connector:
         2.1 mm x 5.5mm Barrel
         Center pin positive

Weight:
         3.2 lbs (1.45 kg)

Dimensions:
         Height 11.5 inches (29.3 cm)
         Width   7.0 inches (17.8 cm)
         Depth   7.0 inches (17.8 cm)

Isolated Outputs:
         Opto-isolated
         60v blocking
         0.8 ohm ON
         1500 volt Input/Output isolation

Environmental:
         Operating Temperature   0 deg C to +60 c
         Humidity

Installation

The ENC-3300 attaches to a customer supplied radio to generate over-the-air virtual DTMF signals sent to remote equipment.

A cable harness in included with the encoder and attaches between the accessory connector on the rear of the Motorola TRBO radio and the ENC-3300.

Access to the connection, test and adjustment controls is performed by removing two screws from the bottom of the door, then pull the bottom of the door forward and out. Set the access door aside.

Output Connector

Connect the appropriate wires between your radio to the encoder. See the Radio Interface on page 21 for additional information.

The ENC-3300 includes a 9 position depluggable connector for connections to the external radio.
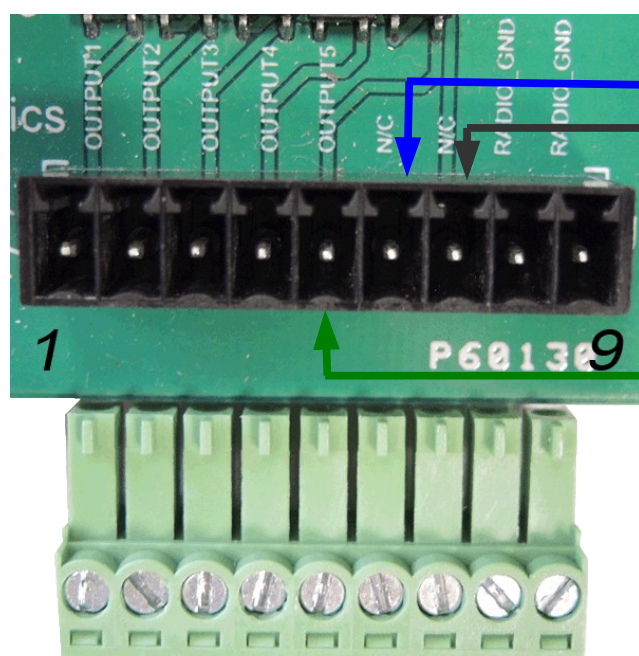
When equipped with optional MP3 player module.

- HIGH audio output is Pin 7.
- LOW audio output is Pin 8.

In addition, OUTPUT 5 will be controlling the Trbo radio as an "External PTT" input rather than a telemetry input. So DTMF codes will not be able to use the digit 5.

Example:

DTMF code 1234 is OK

DTMF code 12345 is BAD

Depluggable Connector J3

Cable Assembly 8010-0000-040

Cable connects between the ENC-3300 and TRBO radio.
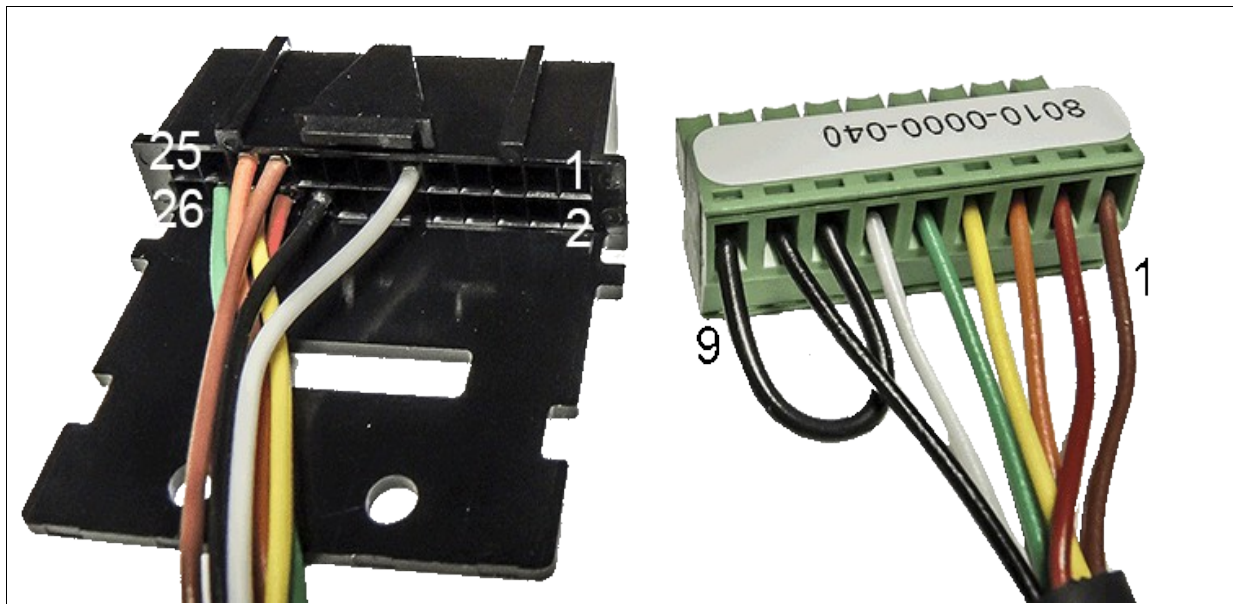
Cable between encoder and the Trbo radio.

Power

Attach 12 volts DC to the power connector J7. Connector size is 2.1mm x 5.5mm. Center pin positive.
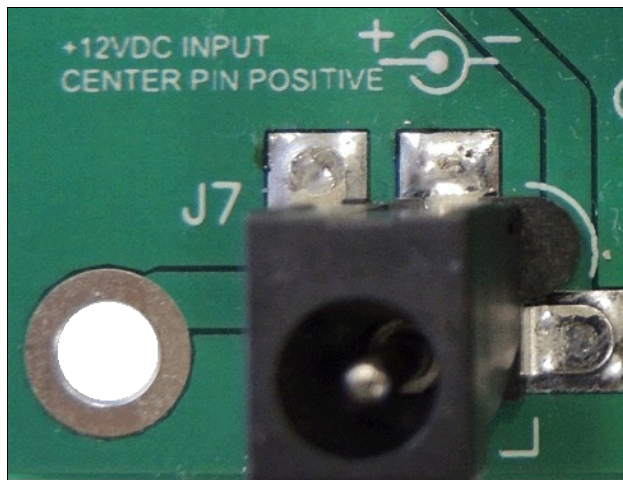
Adjust Audio Levels

There are no audio DTMF levels to adjust. The signals are transmitted digitally. No audio command signals will be heard by other radios on the same channel.

Programming the ENC-3300

If the encoder is not yet programmed, insert the SD memory card containing the DTMF settings then reset power to the encoder. The program information will be transferred to the encoder as it starts.

Open the access door on the ENC-3300 to insert or remove the memory card.

To insert, slide the card into the card holder until it latches into place.

To remove, lightly press the memory card down to release it from the card holder. It will pop up slightly and can then be removed.

During a program upload the encoder actively monitors the new data as it arrives and searches for possible errors or corrupted data. It saves the res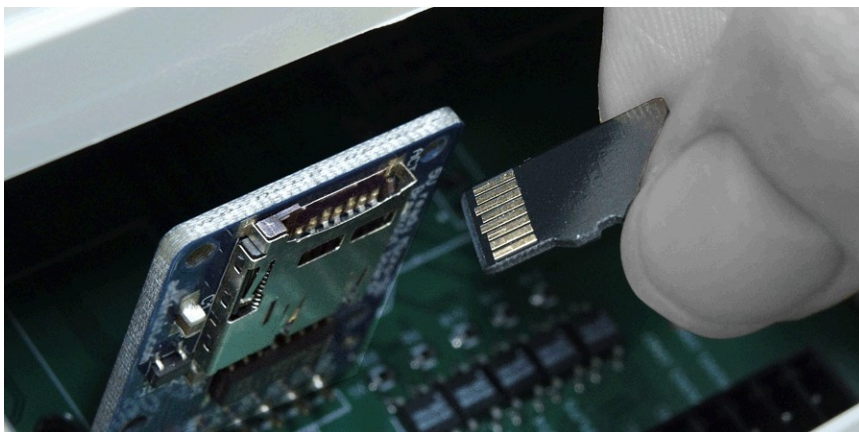ults of the search in a report file on the SD card. The report file has the same name as the file just uploaded, but with a suffix of .RPT (Report) instead of .GP3. To verify a successful transfer it's recommended this report be examined with a text editor such as Windows Notepad after an upload.

See Error: Reference source not found on page Error: Reference source not found for additional information.

Programming the TRBO radio

Programming the TRBO radio is performed using software and cables from the radio's manufacturer. Contact Motorola for more information.

Programming the MP3 Player

The micro SD memory card for the MP3 player cannot be reached through the access door, the encoder case must be opened.

To add or change MP3 files, remove the SD card and place into your computer. The card will be recognized as an external drive. You can then drag and drop files to and from the card and in most computers you can also listen and edit audio files directly from the memory card as well.

See MP3 file naming conventions on page 25 for information on naming the audio files.

Testing

Re-attach the access door. Test the encoder and radio completely before placing into service.

Using the ENC-3300

The encoder should be placed on a flat surface.

Sending a signal or command

•Check and make sure the encoder is powered and ready. Also make sure the radio is turned on, working and the correct channel is selected on the radio.

•Firmly press then release the button on the ENC-3300 for the signal to send. The button should be pressed for at least 1/2 second.

•If the button has been programmed to require a second press before sending the signal, a 15 second countdown timer will appear and the internal speaker will beep every second. The signal will not be sent unless the button is pressed again before the timer expires.

•The LCD screen will indicate when the encoder is sending the signal to the radio. It will also indicate when finished.

Stopping a transmission in progress

Press and release the ESC button to stop a transmission in progress. This will stop any further signals or actions, however it will not retrieve signals already sent.

ESC Button

The ESC button on the keyboard has several duties.

1) Press and release while the RXC is running to stop actions including button countdowns, uncompleted transmissions and other activities.

2) Press and hold the ESC button for eight seconds while the RXC is running to perform a reboot that will also reinitialize the network and SD memory card interface. It has the same effect as removing and reapplying power.

3) While the ENC-3300 is powering up, press and continue holding the ESC key. After a few seconds the LCD screen will display a countdown timer. If the button is still pressed when the timer expires, the program in the ENC-3300 memory will be transferred to the SD memory card. The new file will overwrite any file on the SD card with the same name.

The download feature can be disabled by using the SYS,PGMLOCK command. See PGMLOCK on page 29.

No countdown or option to download the program information will occur if PGMLOCK is enabled.

Programming via SD Card

Programming changes are accomplished using a 2GB micro SD memory card with FAT16 formatting. This method makes field changes fast and easy since no computer is necessary on-site. Memory cards can be sent to customers so they can make the changes themselves.

The program on the SD card is changed using a computer which is then inserted into the Genave product to upload the new settings into the encoder. The encoder retains the data in memory when power is removed.

Upon power-up the Genave product checks the SD card for a program file with the extension GP3. If there is more than one file with that extension stored on the card, only one will load. The program will automatically load.

Active Upload Monitoring – Report File

During a program upload the encoder actively monitors the new data as it arrives and searches for possible errors or corrupted data. It saves the results of the search to a report file on the SD card. The report file has the same name as the file just uploaded, but with a suffix of .RPT (Report) instead of .GP3.

The report is a standard text file and can be viewed with programs such as
- Microsoft: Notepad, Wordpad or Word.
- Multi OS: OpenOffice or LibreOffice.
- Apple: TextEdit.
- Linux/Unix: gedit, vi, nano.

Example - Successful Upload Report

```
DALLAS-1.RPT - Notepad
File  Edit  Format  View  Help
Program name: DALLAS-1.GP3

Program upload completed.
72 lines examined. No errors detected.

Fully test the encoder and related equipment before placing into service.

 --------------------------------------------------------

This report was generated while uploading to the following unit.
Serial Number: 27331
Unit ID: Sheriffs Office - Unit 17
OS Version: GOS3-HH-140621
|

<End of File>
```
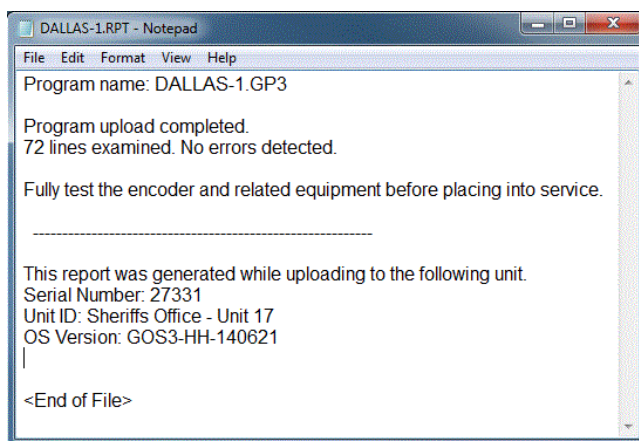
The above report indicates no errors were detected,

Example – Upload Fail Report

```
DALLAS-1.RPT - Notepad
File  Edit  Format  View  Help
Program name: DALLAS-1.GP3

The following errors were detected during the upload.

Line 17: BUTTON1,BAD-CMD-NAME="Wail";
Line 41: BUTTON4,BAD-CMD-VDTMF="11223";

72 lines examined. 2 errors detected.

The above errors need to be corrected and the program uploaded again.
After successfully uploading the program, make sure to fully test
the encoder and related equipment before placing into service.

 --------------------------------------------------------

This report was generated while uploading to the following unit.
Serial Number: 27331
Unit ID: Sheriffs Office - Unit 17
OS Version: GOS3-HH-140621|

<End of File>
```

In the example above, two lines were intentionally failed by manually adding "BAD-CMD-" to the program before the upload was attempted.

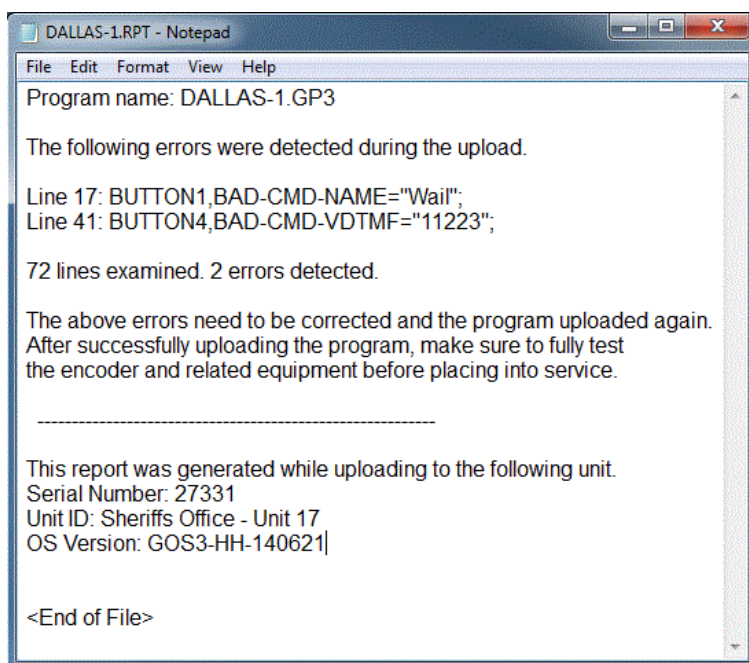The encoder detected the errors then added them to the report so they could be found and corrected.

Active Upload Monitoring - LCD

During a program upload, the ENC-3300 actively monitors the data arriving from the SD card for errors. During the upload, each line entry is displayed in real time on the LCD screen with the result of the line scan indicating either "OK" or "FAIL".

If an error is detected, the encoder:
- Reports "FAIL" on the LCD screen.
- Displays the program line number on the SD card where the error can be found.
- Activates the internal alert tone to get the operators attention.
- Delays the upload for several seconds so the operator can note the information.

After the upload is finished the LCD will display the total number of problems it found with the program. The operator must correct any errors and successfully upload the program and fully test the encoder before placing it into service.

GP3 Programming File

Programming can be accomplished using Genave programming software "ENC3300.exe". The program operates on Windows 2000, XP and Windows 7 operating systems.

ENC3300 is a fill-in-the-blank type of program that is easy to operate. In addition to quickly constructing files for the encoder, it can also read and display information downloaded from an already programmed encoder.
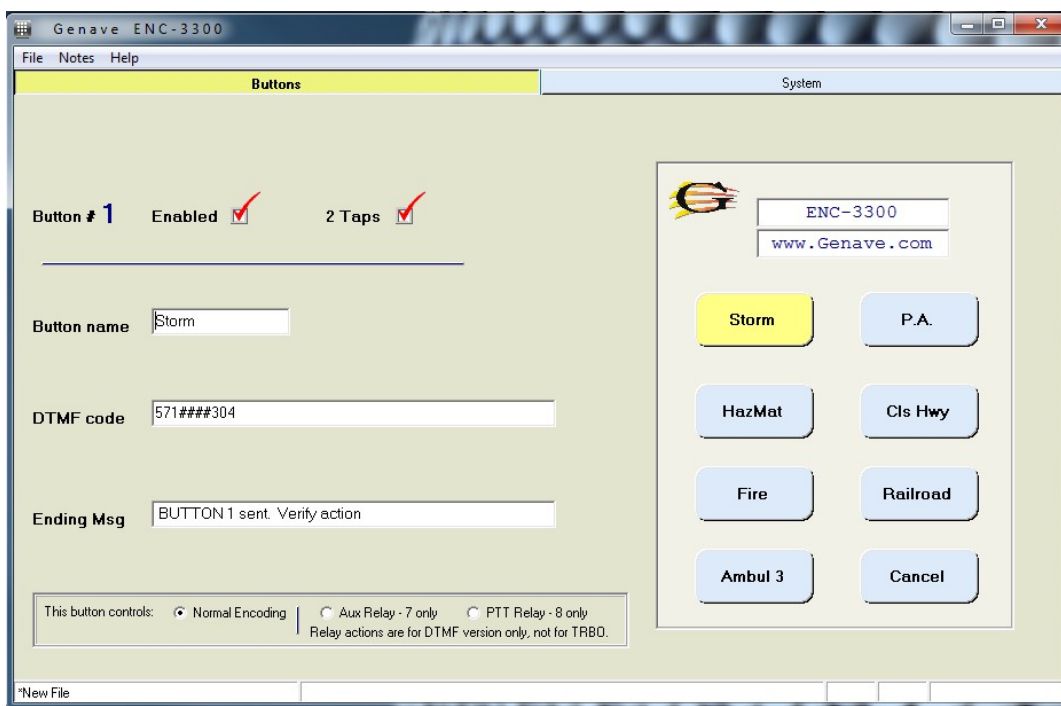
ENC3300.exe program for W7, XP and W2K
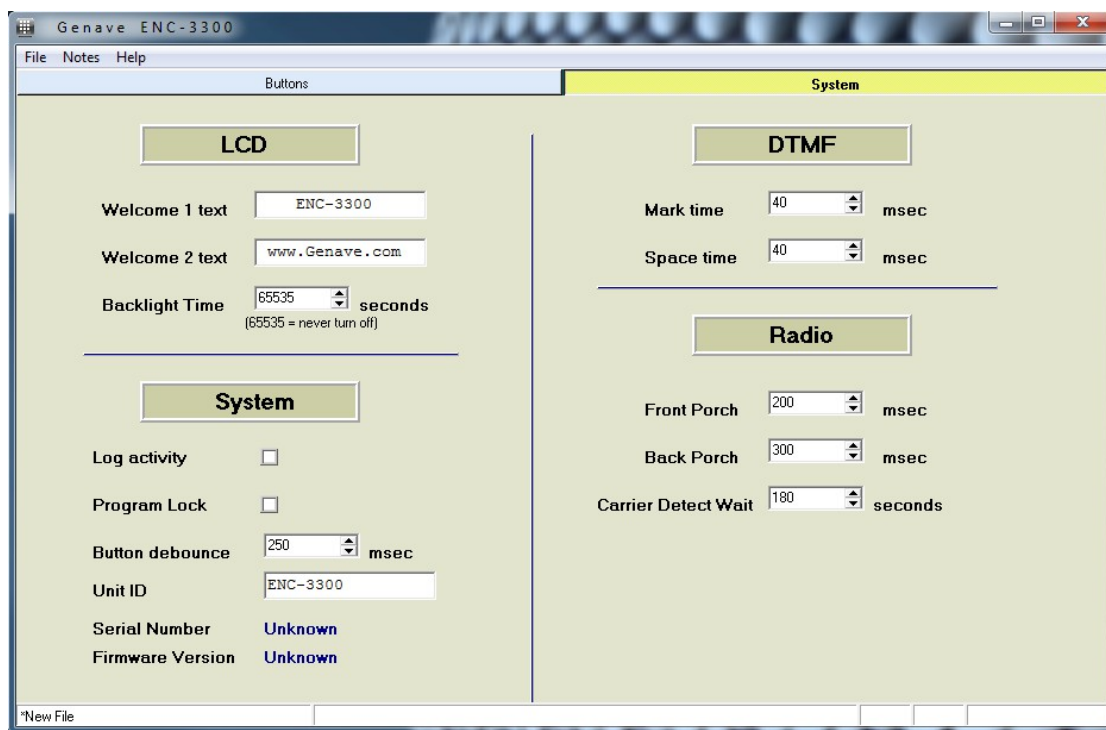
The resultant programming file is a standard text file which can also be edited using a program such as Microsoft Notepad. The file must not contain any formatting options such as Bold, Italic or other such formatting.

The programming file on the SD card contains the command **SYS,PGMUPLOAD=1;** to instruct the encoder to using the programming information. If the command is missing or **SYS,PGMUPLOAD=0;** then the encoder will not upload the information.

After a file has loaded, **SYS,PGMUPLOAD=1;** is changed to **SYS,PGMUPLOAD=0;** to prevent the same program from reloading next time the encoder starts. See FILELOAD on page 29 for additional information.

An example filename
FILEA01.GP3

Filename Length

File names are DOS 8.3 style. The filename prefix before the period cannot be greater than eight characters and the suffix after the period cannot be greater than three characters.

Example
CUST-ONE.GP3   This name is fine.

CITYWV.GP3   This name is fine.

CUST-TOO-LONG-OF-A-NAME.GP3   This name is too long.

Comments

Comments in the file are preceded by two forward slashes without any space between them.

Anything after the comment symbols is ignored until the next line.

//This is a comment that will be ignored

// BUTTON3,ENABLED=1;   This command will not be processed since its preceded by comment.
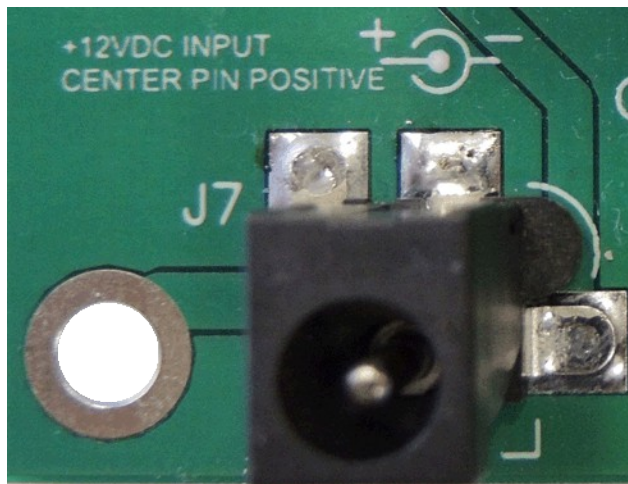
BUTTON3,ENABLED=1;   // The command will be processed since the // is after the command.

Power

The ENC-3300 operates from 12 volts DC.

The power cord attaches to connector J7 which is 2.1mm x 5mm in size and uses a **CENTER PIN POSITIVE** configuration.

A 2 amp 5mm x 20mm glass fuse is used for electrical protection and safety.

Radio Interface

Input / Output Connector

Connector J3 is used for connections to the TRBO radio.
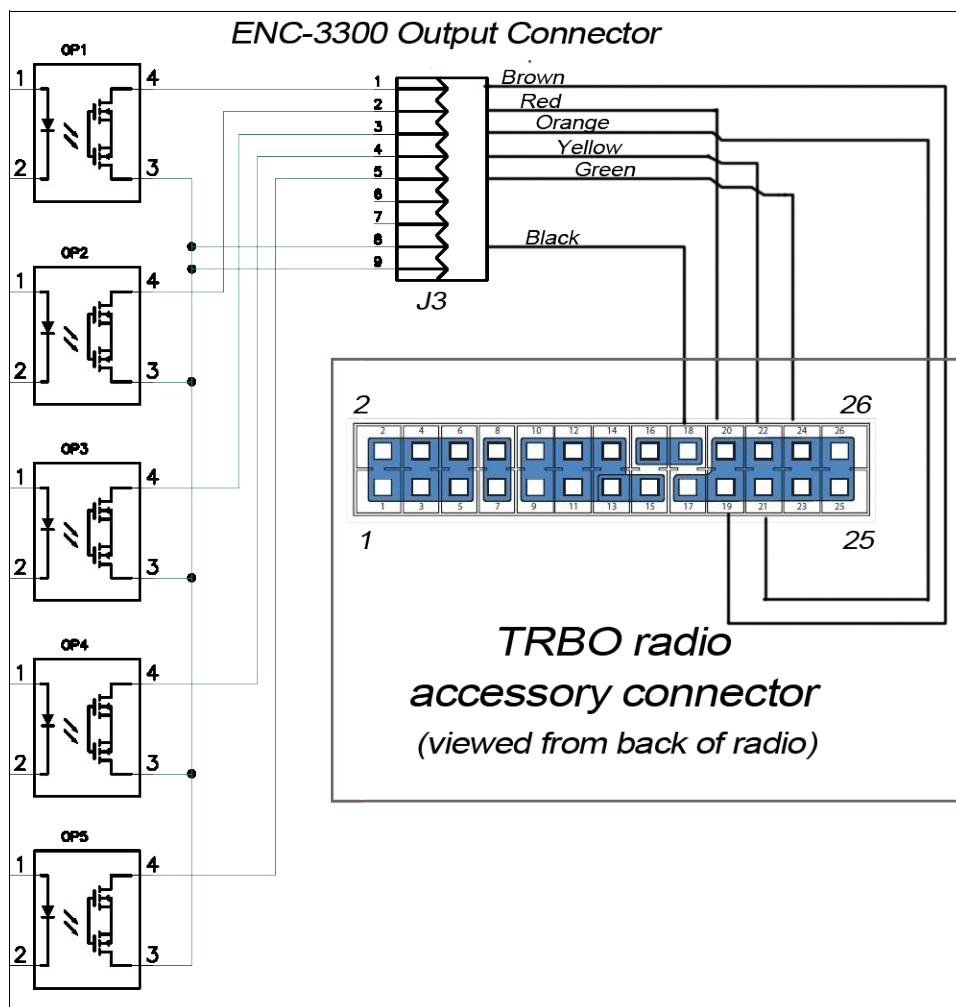
*Note: When using the MP3 play option, install a white wire between
J3 pin 6 and TRBO accessory connector pin 11.*

Carrier Detect

Due to the way the ENC-3300-TRBO handles virtual DTMF transmissions with the TRBO radio, in most instances it's unnecessary to use the carrier detect.

In unique applications the Carrier Detect can be used to signal the ENC-3300 to wait until the channel is clear of traffic.

Connector J3 input "**/CD**" interfaces with the channel busy output from the radio.

The /CD input is "active low". This means your two-way radio needs to supply a ground (low) output when the channel is busy to keep the encoder from transmitting.

When the channel is available the radio can release its low output and float up to 12 volts dc the ENC-3300 waits one additional second after the **/CD** line goes high before beginning transmissions.

The J3 connection labeled "GND" is normally connected to your radio's signal ground so the encoder and the radio have a common ground level to compare. Many times GND can simply be connected to the radio's power supply ground.

See CDWAIT – Carrier Detect wait time in seconds on page 29 for additional information.

VDTMF Code Strings

The ENC-3300 sends virtual VDTMF codes containing up to 128 characters.

In addition to the VDTMF code itself, other instructions and actions can be embedded in the VDTMF string to further customize each transmission. The special characters and instructions are not themselves transmitted, but they can change the operation of the encoder with pauses, relay actions, alert tones and LCD screen messages.

When programming VDTMF codes, the entire string must be enclosed in double quotes.

In the following examples the leading button command has been omitted to make reading easier.
A command such as **BUTTON1,VDTMF="1234";** has been shorted to **VDTMF="1234";**

Due to limitations of the TRBO radios not all the VDTMF digits are available. In the following examples it's assumed digits one to four are available.

VDTMF code string examples:

Standard codes

Example: Send the code 1234
VDTMF="1234";

Example: Send the code 24431;
VDTMF="24431";

Pauses

Each capital letter P pauses the transmission for one second.
Each lower case letter p pauses the transmission for .5 seconds.

Example: Send the code 1234, pause for 2 seconds, then send code 224, pause .5 sec then send code 132413.
VDTMF="1234PP224p132413";

Beep

The internal speaker in the ENC-3300 can be used to prompt the operator or get their attention.

Each capital letter J produces 5 beeps.
Each lower case letter j produces 3 beeps.

Example: Send VDTMF code 1441, produce 5 beeps followed by a 2 second pause and 3 more beeps.
VDTMF="1441JPPj";

Send text to LCD

Displays custom text messages on the LCD screen.

This is an embedded function and must be located within square brackets [ ] .

Example: Show SEND FIRE then send VDTMF code. End with LCD showing GIVE MSG NOW.
VDTMF="[S=Send FIRE]1234[S=GIVE MSG NOW]";

Example: Same as above but adding beeps can alert operator to give message or take other actions. In this example, pauses are added to keep the transmitter keyed for an addition 3 seconds to allow the operator time to key their microphone so the transmitter remains engaged without dropping between the code and the voice message.
VDTMF="[S=Send FIRE]1234[S=GIVE MSG NOW]JPPP";

Example: Updating LCD screen while sending several VDTMF codes
VDTMF="[S=Send FIRE]1234pp[S=Sending STORM]3212p[S=GIVE MSG NOW]PP";

Example:
VDTMF=1442[S=ACTIVATE ALL CMD HAS BEEN SENT]PP324[S=ALL DONE]PPP";

In the above example
•The VDTMF code **1442** will be sent.
•LCD screen will display **ACTIVATE ALL CMD HAS BEEN SENT** .
•There will be a two second pause.
•VDTMF code **324** will be sent.
•LCD screen will display **ALL DONE** .
•There will be a final three second pause.

Note: Text to be displayed can contain a maximum 32 characters for the standard 2 x 16 LCD screen.

Play a pre-recorded audio file - [PLAY=x]

Purpose: Play an MP3 audio file over the Trbo radio. Audio is heard over two-way radios and emergency warning sirens at the same time.

[PLAY=x]   x can be from one to eight. The first three characters of the MP3 filenames on the Micro SD memory card must be three digits long with leading zeros followed by a hyphen. Valid names are 001-.mp3 to 008-.mp3.

Example:
BUTTON3,DTMF=1442PPP[TX=1][S=PLAYING MESSAGE]P[PLAY=7][S=MESSAGE SENT]P";

In the above example
- DTMF code **1442** will be sent.
- A three second pause is inserted to allow additional time for Trbo system to send codes.
- [**TX=1**] will engage output 5 on the encoder. Pin 24 on the Trbo ACCY should be programmed to accept this as an "External PTT".
- LCD screen will display   **PLAYING MESSAGE**
- There will be a one second pause.
- Audio file **007.mp3** will be played.
- LCD screen will display   **MESSAGE SENT**
- There will be a final one second pause.

MP3 file naming conventions

MP3 files require a 3-digit number (using leading zeros) and a hyphen at the beginning of the filename. 001- for the first file, 002- for the second mp3 file and so on. The rest of the filename can be anything. For example, the following are both valid names.

001-Three Mile Warning.mp3
006-EvacuateBuilding.mp3

Transmit control of Trbo radio - [TX=0]

Purpose: External PTT control of Trbo radio. Employed when transmitting pre-recorded MP3 audio from the encoder.

[TX=1]   Engage external PTT on Trbo radio.
[TX=0]   Discontinue external PTT of Trbo radio.

Note: It's not necessary to turn off the transmitter. This is performed automatically at the end of the DTMF code. [TX=0] is only included if you want to manually turn off the transmitter after an audio file.

Example:
BUTTON4,DTMF=1442PPP[TX=1][S=SENDING MESSAGE]P[PLAY=3][S=MESSAGE SENT]P";

In the above example
- DTMF code **1442** will be sent.
- A three second pause is inserted to allow additional time for Trbo system to send codes.
- [**TX=1**] will engage output 5 on the encoder. Pin 24 on the Trbo ACCY should be programmed to accept this as an "External PTT".
- LCD screen will display   **SENDING MESSAGE**
- There will be a one second pause.
- Audio file 003.mp3 will be played.
- LCD screen will display   **MESSAGE SENT**
- There will be a final one second pause.

SYS – System

SHOWALL

Returns all the current System settings

SYS,SHOWALL;

SYS,FILENAME="GENAVE-1.GP3";
SYS,UNITID="Unit 1";
SYS,VER="GOS3-HH-131128";
SYS,SERNUM="12345";
SYS,WELCOME1=" ENC-3300-DTMF";
SYS,WELCOME2=" www.Genave.com ";
SYS,CDWAIT=180;
SYS,DEBOUNCE=250;
SYS,BKLIGHT=65535;
SYS,FILELOAD=2;
SYS,LOG=0;
SYS,PGMLOCK=0;

FILENAME

Maximum 32 character string to identify the program name.

The FILENAME is changed by uploading a new program.
It can also be changed manually. Manual changes must be enclosed in double quotes

SYS,FILENAME="MYPGM.GP3";

UNITID

Maximum 32 character string to identify the location or purpose of the unit.

Changes must be enclosed in double quotes.

SYS,UNITID="Watertower at 905 West";

UNITID string does not need to be unique.

BKLIGHT

Time in seconds for the LCD back light to remain on after last button press or action.

Values are 0 to 65535.

SYS,BKLIGHT=60;   // remains on for 60 seconds

SYS,BKLIGHT=65535; // 65535 is special value, back light does not turn off.

WELCOME1

Text to show on top line of LCD when the unit is in idle state.

Sixteen characters maximum.

Changes must be enclosed in double quotes

SYS,WELCOME1=" CUSTOMER NAME ";

WELCOME2

Text to show on top line of LCD when the unit is in idle state.

Sixteen characters maximum.

Changes must be enclosed in double quotes.

SYS,WELCOME2="www.COMPANY.com";

LOG

Enables and disables writing to the log on the SD card.

SYS,LOG=0;   or   **SYS,LOG=1;**

DEBOUNCE

Debounce time in msec for the inputs to debounce.

SYS,DEBOUNCE=250;   (default)

SYS,DEBOUNCE=1000;   Set debounce time to one second.

PGMUPLOAD

Allows or denies a program upload to occur from the SD card to the encoder memory.

PGMUPLOAD is not a stored value in the ENC memory. Instead, it is a command placed in the program located on the SD memory card.

On power-up reset the encoder checks the SD card for a file with the .GP3 suffix. If found it opens the file and checks for the command **SYS,PGMUPLOAD=1;** . The program is not uploaded to the encoder if the command is missing or does not exactly match the format.

If the command **SYS,PGMUPLOAD=1;** is located then the program is uploaded to the encoder. After the programming, the command **SYS,PGMUPLOAD=1;** is changed in the .GP3 file to **SYS,PGMUPLOAD=0;** .

FILELOAD

Controls the actions of the file during an upload from the SD card.

1=load w/o file changes
2=load, then create an unaltered backup file, then change **SYS,PGMUPLOAD=1;**
      to **SYS,PGMUPLOAD=0;** in the .GP3 file
99=load then delete the file
255=disable auto load

PGMLOCK

Controls the feature to download the information in the ENC to an SD memory card.

SYS,PGMLOCK=0;   Disables the program lock. Information can be downloaded to the SD card.

SYS,PGMLOCK=1;   Prevents program information from being downloaded to the SD card.

CDWAIT – Carrier Detect wait time in seconds

Purpose: Adjusts the amount of time the ENC-3300 will wait for the channel to clear before attempting to transmit. If the Carrier Detect is still busy when the CDWAIT time expires, the attempt is aborted and no signal is sent.

Minimum value: 0   Zero disables Carrier Detect. Channel activity will not be checked before transmit.

Maximum value 65535. When set to 65535, the ENC-3300 will not time out. A power reset or pressing the ESC key may be necessary to abort the attempt if the channel does not become available.

Overview:
The carrier detect line input of the ENC-3300 can be connected to the carrier detect output of a two-way radio to monitor the radio channel, and avoid transmitting if the channel is already in use.

The ENC-3300 checks the carrier detect just before it engages it's digital output to the radio. If the channel is busy it will wait until the channel is available before continuing with it's transmission. If the channel remains busy past the time set by CDWAIT, the ENC-3300 will abort the attempt and the signal will not be sent.

Hardware connection:
The Carrier Detect (**/CD**) input on the ENC-3300 is an active low. This means the **/CD** wait logic engages when the **/CD** input is taken low in respect to the ENC's ground.

Most two-way radios supply a logic low output when the channel is busy, and this matches into the ENC's input quite well. It is important however to remember that the ENC-3300 and your radio must share a common power ground for the CD to operate. If a common ground can not be attained, or if your radio raises it's carrier detect when there is a busy channel, then it may be necessary for the installer to add an isolation relay or opto-coupler to complete the interface.

PLAYERVOL – Default output level from MP3 player

Purpose: Adjusts MP3 player audio level to assist in matching transmitting radio input without requiring external padding.

Minimum value 0.   No audio.
Maximum value 100.   Full audio out.

SYS,PLAYERVOL=100   Factory default is 100

Note: Temporary volume adjustments can also be made using [VOL=x] inserted in the DTMF code. Such in-line volume changes only take effect for the button where they appear in the DTMF string.

DATALOG.TXT

Actions, events and communications can be automatically saved to a log file on the SD card.

Memory Card

The SD memory card size must be 2GB max and formatted in FAT16.

Formatting the Memory Card

While its possible to format SD cards using your computer's operating system, its strongly recommend you download the free official SD card formatting utility written by the SD Association.
The utility solves many of the problems associated with formatting by Windows and Mac operating systems.

Download the free program at   ***https://www.sdcard.org/downloads/formatter_3/***

Structure of log file

Each entry is contained on one line that ends with a carrier return \n.

Each button entry has a 16 character random value to uniquely identify the event.

Example log file

E73PjZ7T6cN3Fsp5,<RxS3>Input 1 has been activated. <SW1-ON>
tHrnKNCfAYwHd8yC,<RxS3>Input 1 has been activated. <SW1-ON>
6WEWfZs2kAwaPWya,<RxS3>Input 1 has been activated. <SW1-ON>
waHMs7X7S52ynRTk,<RxS3>Input 1 has been activated. <SW1-ON>
BxKHYtfFXcs78r4c,<RxS3>Input 1 has been activated. <SW1-ON>
POWER UP

BUTTONx

Button Settings

Each of the eight buttons on the encoder are independent of the others and can have a unique code string.

Below are three button examples. All the button data can be viewed at Sample File on page 36.

```
BUTTON1,NAME="BUTTON 1";
BUTTON1,ENABLED=2;
BUTTON1,VDTMF="111341";
BUTTON1,LCDNAME="BUTTON 1";
BUTTON1,ENDTEXT="  BUTTON 1 sent. Verify action  ";
BUTTON1,LOGOUT=0;
BUTTON1,QUIET=0;
BUTTON1,OUTPUT=0;

BUTTON2,NAME="BUTTON 2";
BUTTON2,ENABLED=2;
BUTTON2,VDTMF="2241";
BUTTON2,LCDNAME="BUTTON 2";
BUTTON2,ENDTEXT="  BUTTON 2 sent. Verify action  ";
BUTTON2,LOGOUT=0;
BUTTON2,QUIET=0;
BUTTON2,OUTPUT=0;

BUTTON6,NAME="BUTTON 6";
BUTTON6,ENABLED=2;
BUTTON6,VDTMF="341224PP422231";
BUTTON6,LCDNAME="BUTTON 6";
BUTTON6,ENDTEXT="  BUTTON 6 sent. Verify action  ";
BUTTON6,LOGOUT=0;
BUTTON6,QUIET=0;
BUTTON6,OUTPUT=0;
```

ENABLED

Determines if button actions will be be processed.

BUTTONx,ENABLED=1;   (default) button is active

BUTTONx,ENABLED=0;   button is disabled, actions will be ignored

BUTTONx,ENABLED=2;   button must be pressed twice within 15 seconds to activate

LCDNAME

Text shown on the LCD screen for the particular button.

Maximum 16 alpha-numeric characters.

Changes must be enclosed in double quotes

BUTTON1,LCDNAME="BUTTON 1";

VDTMF

VDTMF code to send.

Maximum 128 characters.

VDTMF codes must be enclosed in double quotes.

BUTTON1,VDTMF="1234";

BUTTON2,VDTMF="[S=Send FIRE]1234pp[S=Sending STORM]3212p[S=GIVE MSG NOW]PP";

Special VDTMF embedded characters

•*p – Pause for 0.5 second (lower case p)*

•*P – Pause for 1 second   (upper case P)*

•*j – Beep 3 times (lower case j)*

•*J – Beep 5 times (upper case J)*

Special VDTMF embedded functions

Send text to LCD - [S=lcd text here];

Purpose: Send text string to the LCD screen.

Example:
BUTTON2,VDTMF=1442[S=ACTIVATE ALL CMD HAS BEEN SENT]PP324[S=ALL DONE]PPP";

In the above example
•The VDTMF code **1442** will be sent.
•LCD screen will display **ACTIVATE ALL CMD HAS BEEN SENT**
•There will be a two second pause.
•VDTMF code **324** will be sent.
•LCD screen will display **ALL DONE**
•There will be a final three second pause.

Note: Text to be displayed can contain a maximum 32 characters for the standard 2 x 16 LCD screen.

TEXT

Text sent to the local log file when the button action is successful.

Maximum 64 alpha-numeric characters.

Changes must be enclosed in double quotes

BUTTON1,TEXT="Input 1 has been activated. <SW1-ON>";

Also see: **LOGOUT** for additional information.

ENDTEXT

Maximum 34 alpha-numeric characters.

Changes must be enclosed in double quotes.

This data is shown on the LCD screen after the VDTMF code completes.

You can also embed text in the VDTMF string instead of using this command.

BUTTON1,ENDTEXT=" BUTTON 1 sent. Verify action ";

LOGOUT

Logs the **TEXT** to the SD log when **LOGOUT** is enabled for the button.

BUTTON1,LOGOUT=1; Make a log entry to the SD card upon a successful button action.

BUTTON1,LOGOUT=0; (default) No log entry will be made when this button is pressed.

QUIET

Inhibits messages to user if they press a button that has been disabled.

BUTTON1,QUIET=0; (default) Notify user if they press a button is disabled.

BUTTON1,QUIET=1; Do not notify the user they have pressed a disabled button.

If an individual button is disabled, the QUIET option allows you to either advise the user of the disabled button status or not make any notification.

OUTPUT

Due to its digital nature, the TRBO model encoder does not employ output relays so the value of this command should be left at zero.

BUTTON4,OUTPUT=0;

INITIAL

Initializes the button variable back to default.
BUTTONx,INITIAL=1;

Use a value of 65535 to initialize all the buttons.
BUTTON65535,INITIAL=1;

Sample File

```
SYS,PGMUPLOAD=1;
//<HEADER>
//  This file was downloaded from ENC-3300-DTMF.
//  Thoroughly test the unit before placing into service.
//</HEADER>

SYS,FILENAME="GENAVE-1.GP3";
SYS,UNITID="Sheriffs Office";
SYS,VER="GOS3-HH-131128";
SYS,SERNUM="12345";
SYS,WELCOME1="  ENC-3300-DTMF";
SYS,WELCOME2=" www.Genave.com ";
SYS,CDWAIT=180;
SYS,DEBOUNCE=251;
SYS,BKLIGHT=65535;
SYS,FILELOAD=2;
SYS,LOG=0;
SYS,PGMLOCK=0;

BUTTON1,NAME="BUTTON 1";
BUTTON1,ENABLED=2;
BUTTON1,VDTMF="12141";
BUTTON1,LCDNAME="BUTTON 1";
BUTTON1,ENDTEXT="  BUTTON 1 sent. Verify action  ";
BUTTON1,LOGOUT=0;
BUTTON1,QUIET=0;
BUTTON1,OUTPUT=0;

BUTTON2,NAME="BUTTON 2";
BUTTON2,ENABLED=2;
BUTTON2,VDTMF="222441";
BUTTON2,LCDNAME="BUTTON 2";
BUTTON2,ENDTEXT="  BUTTON 2 sent. Verify action  ";
BUTTON2,LOGOUT=0;
BUTTON2,QUIET=0;
BUTTON2,OUTPUT=0;

BUTTON3,NAME="BUTTON 3";
BUTTON3,ENABLED=2;
BUTTON3,VDTMF="333421";
BUTTON3,LCDNAME="BUTTON 3";
BUTTON3,ENDTEXT="  BUTTON 3 sent. Verify action  ";
BUTTON3,LOGOUT=0;
BUTTON3,QUIET=0;
BUTTON3,OUTPUT=0;
```

```
BUTTON4,NAME="BUTTON 4";
BUTTON4,ENABLED=2;
BUTTON4,VDTMF="432433";
BUTTON4,LCDNAME="BUTTON 4";
BUTTON4,ENDTEXT="  BUTTON 4 sent. Verify action  ";
BUTTON4,LOGOUT=0;
BUTTON4,QUIET=0;
BUTTON4,OUTPUT=0;

BUTTON5,NAME="BUTTON 5";
BUTTON5,ENABLED=2;
BUTTON5,VDTMF="4244323";
BUTTON5,LCDNAME="BUTTON 5";
BUTTON5,ENDTEXT="  BUTTON 5 sent. Verify action  ";
BUTTON5,LOGOUT=0;
BUTTON5,QUIET=0;
BUTTON5,OUTPUT=0;

BUTTON6,NAME="BUTTON 6";
BUTTON6,ENABLED=2;
BUTTON6,VDTMF="3411324";
BUTTON6,LCDNAME="BUTTON 6";
BUTTON6,ENDTEXT="  BUTTON 6 sent. Verify action  ";
BUTTON6,LOGOUT=0;
BUTTON6,QUIET=0;
BUTTON6,OUTPUT=0;

BUTTON7,NAME="BUTTON 7";
BUTTON7,ENABLED=2;
BUTTON7,VDTMF="13423";
BUTTON7,LCDNAME="BUTTON 7";
BUTTON7,ENDTEXT="  BUTTON 7 sent. Verify action  ";
BUTTON7,LOGOUT=0;
BUTTON7,QUIET=0;
BUTTON7,OUTPUT=0;

BUTTON8,NAME="BUTTON 8";
BUTTON8,ENABLED=2;
BUTTON8,VDTMF="2114";
BUTTON8,LCDNAME="BUTTON 8";
BUTTON8,ENDTEXT="  BUTTON 8 sent. Verify action  ";
BUTTON8,LOGOUT=0;
BUTTON8,QUIET=0;
BUTTON8,OUTPUT=0;
```

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